

Model 9016 Upgrade Instructions

February 2004



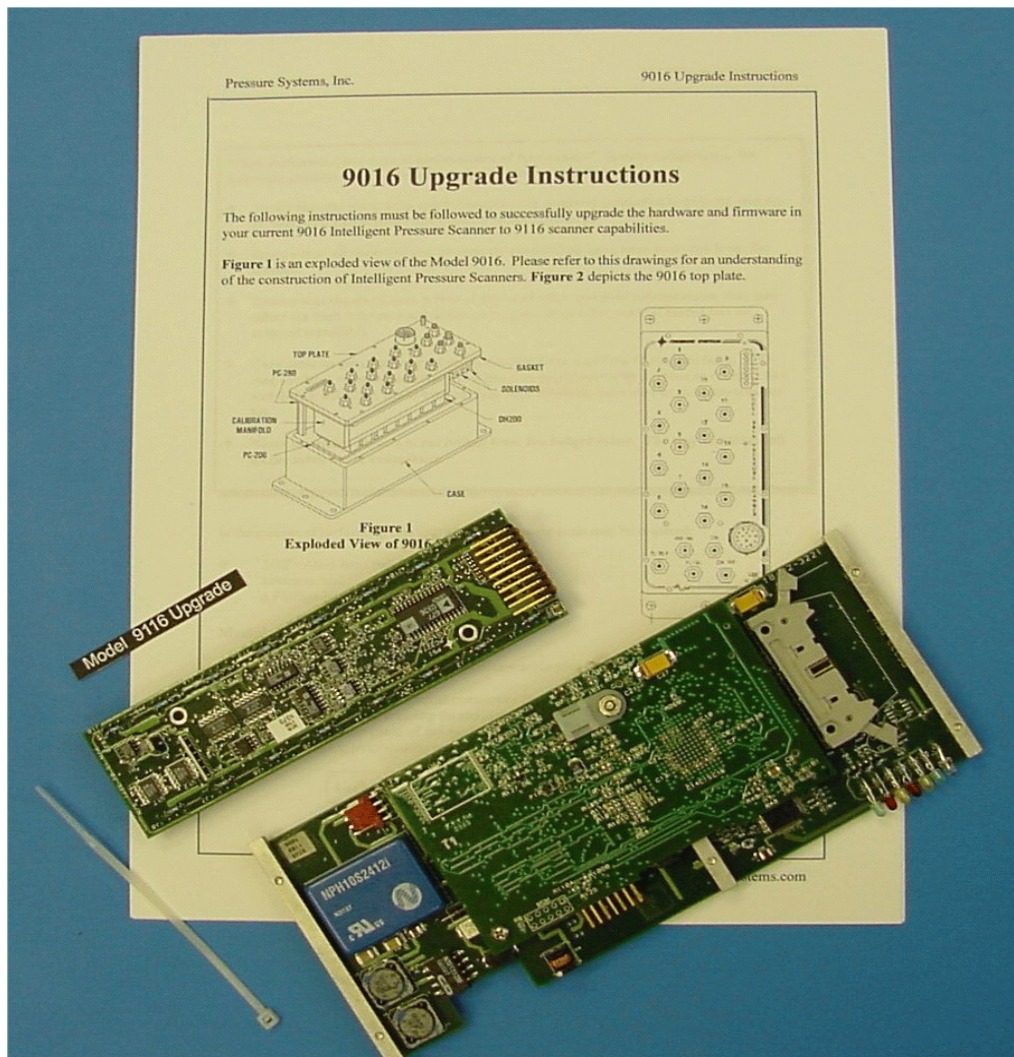
NetScanner™ System

www.PressureSystems.com

Packing List

When you purchase your 9016 Upgrade Kit, the following parts will be included:

- ☐ 1 - 9016 Upgrade Installation Instructions
- ☐ 1 - Upgrade Tag
- ☐ 1 - PC327 analog board
- ☐ 1 - Assembled PC322-PC323 processor unit
- ☐ 1 - Cable tie 5.5 inch



9016 Upgrade Instructions

The following instructions must be followed to successfully upgrade the hardware and firmware in your current 9016 Intelligent Pressure Scanner to 9116 scanner capabilities.

Figure 1 is an exploded view of the Model 9016. Please refer to this drawings for an understanding of the construction of Intelligent Pressure Scanners. **Figure 2** depicts the 9016 top plate.

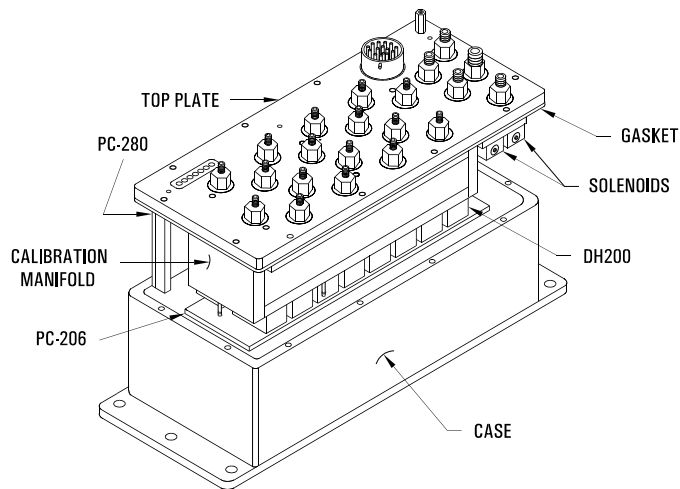


Figure 1
Exploded View of 9016 Scanner

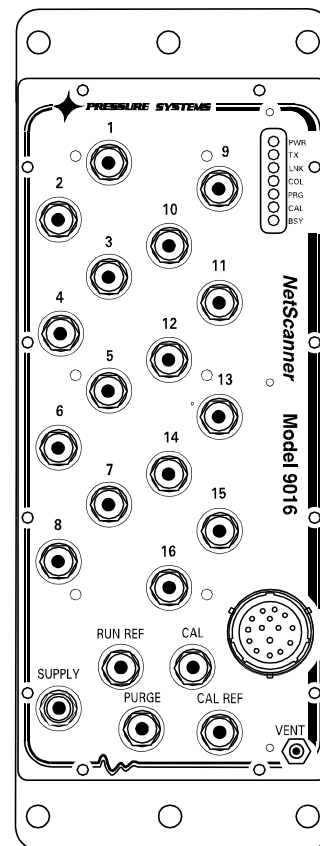


Figure 2
9016 Top Plate

When performing any type of maintenance of NetScanner™ System components, the following guidelines and precautions should always be followed:

- **Verify that the work area and technicians are properly grounded to prevent damage to electronic components due to electrostatic discharge.**
- **Ensure that all electrical and pneumatic connections have been removed from the module.**
- **Ensure that the work area is free of dust and other possible contaminants that may affect the high tolerance machined parts (and pneumatic seals, if model has an integral manifold).**
- **Care must be taken to prevent contaminants from reaching O-ring surfaces. If O-ring surfaces require cleaning, use a lint-free applicator with acetone to remove dirt and lightly lubricate the O-ring surface with Krytox® provided in the maintenance kit.**
- **Never use sharp objects to cut tubing from the bulged tubes. The tiny scratches left on the tubes could cause leaks.**

In the process of performing this upgrade, the following tools will be required:

- Phillips-head screwdriver (No.1 preferred), and
- small cutters.

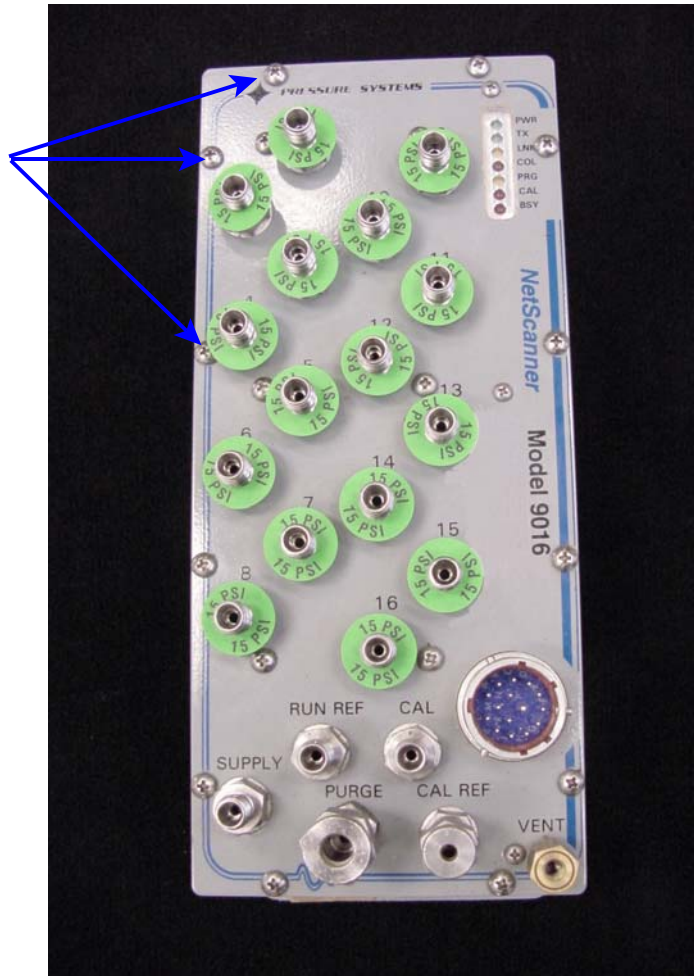
Module Disassembly

The following procedure should be used to disassemble your model 9016 prior to this upgrade.

- (1) Place the scanner with its external connectors facing up. With one hand holding the module housing, remove all screws securing the top plate to the module housing. These are located around the perimeter of the top panel of the module housing. The 9016 uses twelve (12) Phillips-head screws around the top plate outside perimeter. See **Figure 3**, next page.

Use caution not to slip and scratch the top plate

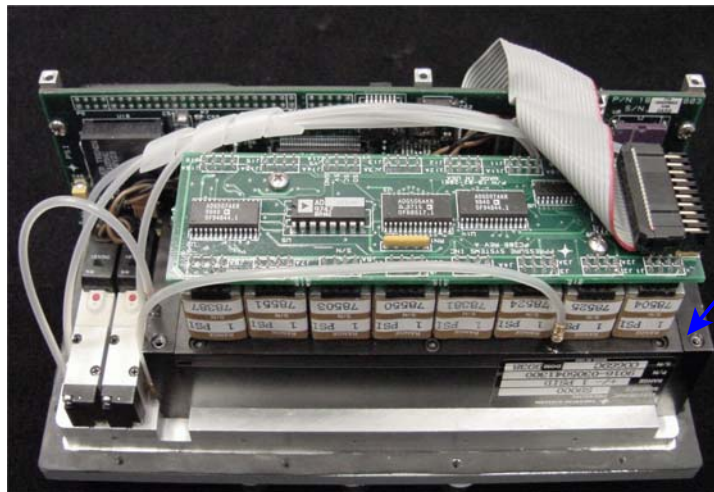
Remove 12
perimeter Phillips-
head screws.



**REMOVE ONLY
THE 12
PERIMETER
SCREWS.**

Figure 3
9016 Top Plate

- (2) When all screws have been removed, gently lift the top panel and attached electronics up and out of the housing. All components of the pressure scanner are attached to the top plate and will lift out of the module housing when the top plate is removed. See **Figure 4**, next page. In some cases, it may be easier to hold the top plate and turn the module over, lifting the housing off the top panel. If the Viton[®] gasket is loose, tack it down with 495 LocTite[™] super bonder[™]. (Loctite Corp., USA) (or other suitable adhesive capable of adhering to the gasket material and to the aluminum case).



Viton® gasket

Figure 4
9016 Out of Housing

Electronic Circuit Board Replacement

Your 9016 contains two (2) electronic circuit boards that must be removed and replaced for this upgrade.

PC-206 Amplifier/Multiplexer Board

The following procedures should be used for removal of the PC-206 Amplifier/Multiplexer Board. Use the tools and follow the general precautions previously described.

- (1) Carefully remove the wiring harness from connector P1 of the PC-206 board. (See **Figure 5**.)
- (2) Remove the two (2) Phillips-head screws securing the PC-206 board to the DH200 transducers. Carefully disconnect the PC-206 board from the DH200s by slowly working the board off; starting at one end and moving down the length of the board. It is important to not break the gold pins when removing the board. Inspect the PC-206 boards for broken pins and remove from DH200 transducers, if necessary.

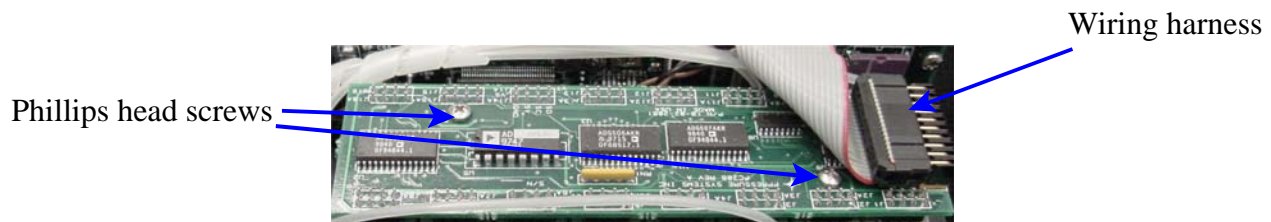


Figure 5
PC-206 Board

PC-280 Ethernet Microprocessor/A-D Board

The following procedures should be used for removal of the PC-280 Ethernet Microprocessor/A-D Board. Use the tools and follow the general warnings already described.

- (1) Carefully remove any attached wiring harnesses from connectors P1, P3, and P6 of the PC-280 board. This will require cutting one nylon tie-wrap attached to the center mounting bracket. (See **Figure 6**)

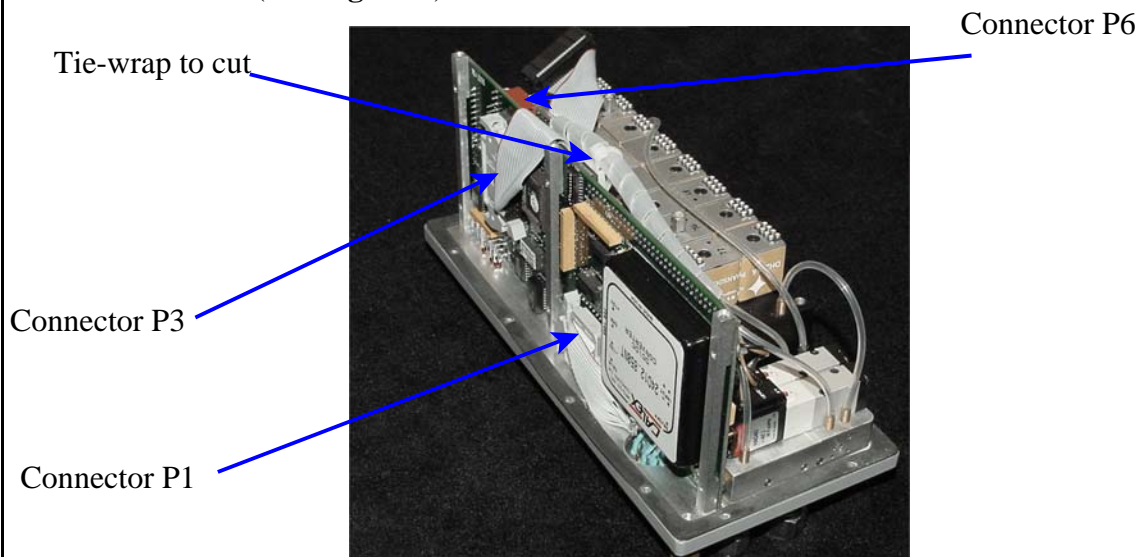


Figure 6
PC-280 Board and Connectors

- (2) Remove the three (3) 2-56 Phillips head screws securing the PC-280 mounting brackets to the top plate. These screws will be in line with the PC-280 LEDs that protrude through the top plate. Save for later use. Carefully lift the board out of the top panel. (See **Figures 6a** and **6b**.)

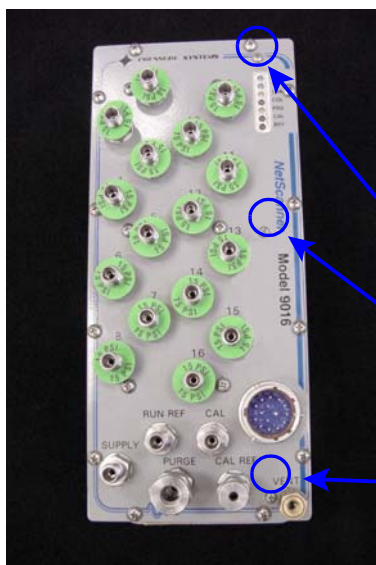


Figure 6a
9016 Top Plate



Figure 6b
PC-280 Board

Three screws to
remove PC-280 board

Retain all of the existing connecting cables for use with your new PC boards. The two (2) boards you have just removed will be replaced with three (3) new printed circuit boards. The PC-206 board will be replaced by the PC-327 Analog Board. The PC-280 board will be replaced by the PC-322 Mother Board and the PC-323 Microprocessor Board. The PC-322 and the PC-323 will arrive attached to one another and they will be installed as a single unit.

Installing the PC-327 Analog Board

- (1) Remove the new PC-327 board from its shipping container, paying particular attention to prevention of electrostatic discharge damage.
- (2) Place the new board on top of the DH-200s with the connector pins on the same end as the wiring harness. Route the one tube beneath the board. (See **Figure 7**.) Line up the gold pins, and gently and slowly press to connect. Pay particular attention to the C1 and C4 tubes and ensure they are not crimped or crushed between the PCB and the DH200s. (See **Figures 7 and 7a**.)

WARNING: Ensure that the board is oriented the same as the board just removed (connector pins on the same end as the wiring harness) and the gold pins are lined up with and fit easily into the connectors on the DH200s.

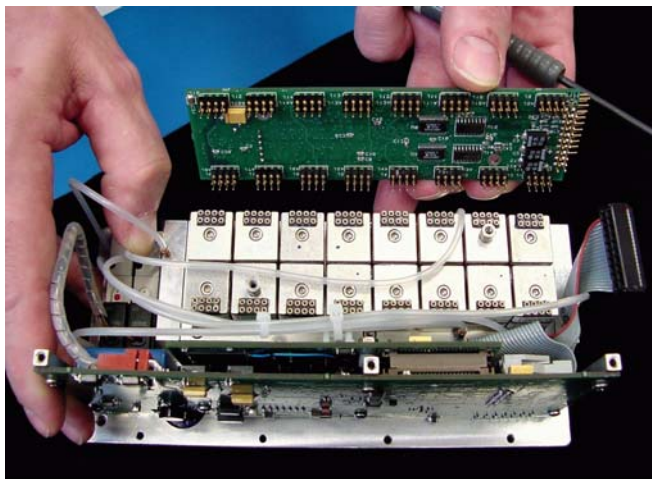


Figure 7
Tubing Routing Underneath PC-327 Board

- (3) Reinstall the two (2) Phillips-head screws to secure the PC-327 board.

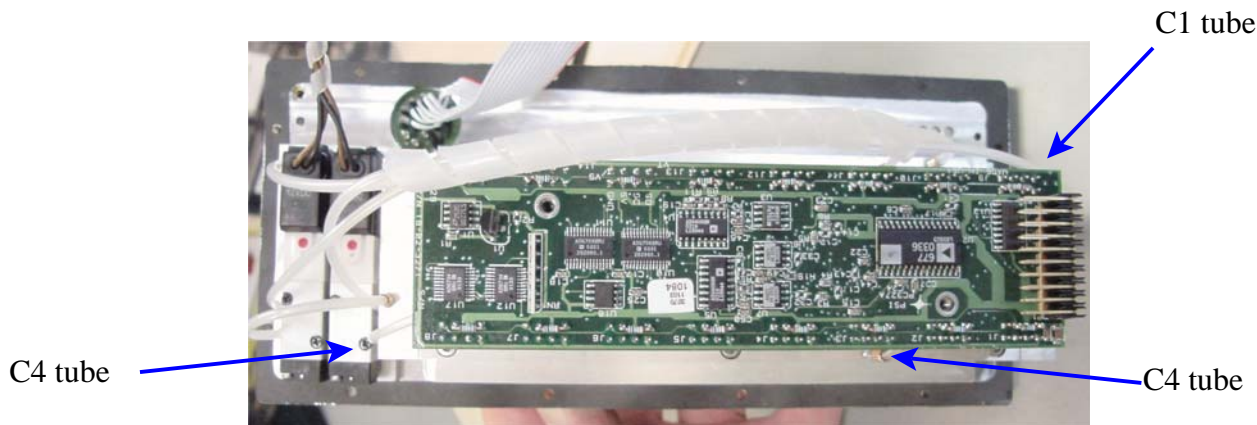


Figure 7a
PC-327 Board

Installing the PC-322/323 Boards

As previously mentioned, the PC-322 and the PC-323 boards will arrive to you completely connected and may be installed very similarly to the installation of the old PC-280 board. (See **Figure 8**.)

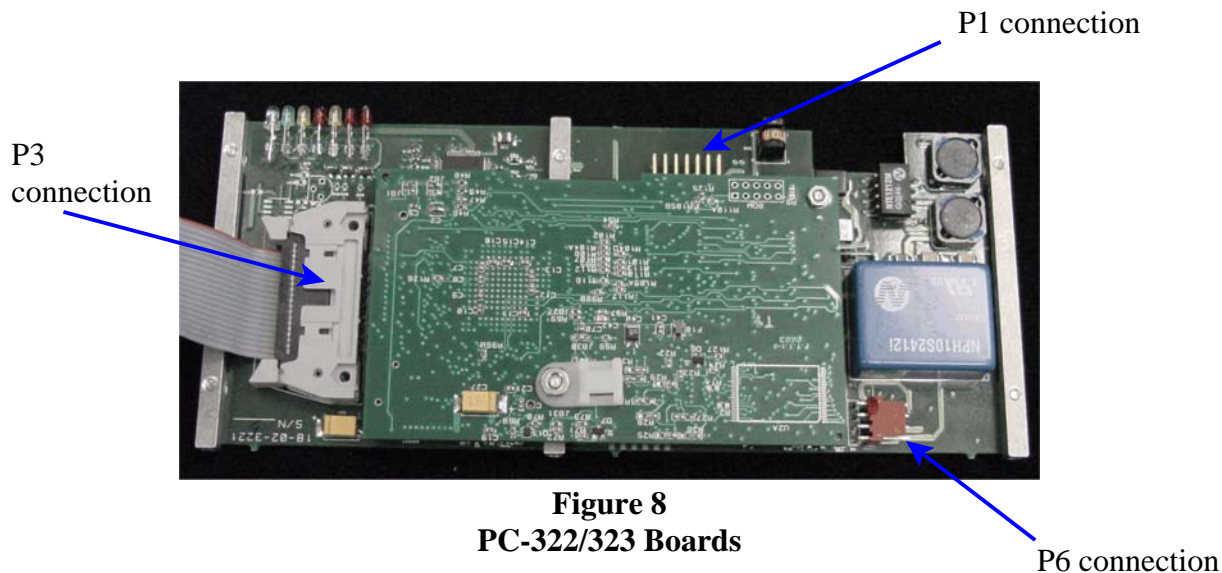


Figure 8
PC-322/323 Boards

- (1) Use the same precautions as previously noted when removing these boards from their protective shipping container; i.e., prevention of electrostatic discharge damage.
- (2) The calibration valve control wires are attached to connector P6 (as shown in **Figure 8**). The routing of these wires will need to be changed during the upgrade. The wires connected to the four pin P6 connector will need to be freed from about one-half of the white spiral wire wrap. This may be accomplished by unwinding approximately half of the nylon spiral

wire wrap, starting near the P6 connector. The freed white nylon spiral wire wrap may be re-used on other wires or tubes, or may simply be cut off and discarded. If you choose to cut off the spiral wire wrap, be careful not to nick or cut any other wires or tubes.

- (3) Attach the wiring harnesses to their respective connectors, P1, P3, and P6. Note that the connector from P3 connects to your new PC-327 board. It will be connected to the PC-327 board after the PC-322/323 boards have been attached to the module top plate. Remember, the red line on your ribbon cable is to be connected to Pin 1 of the PCB.
- (4) Plug the connector from the top plate into P1 of the PC-322 board. Be careful to connect the correct pins together (Pin1 to Pin1) and make sure the pins are aligned. If not, the PCB could be damaged. Pin 1 is denoted by the square pad on the solder side of the board. (See **Figures 9, 9a, and 10.**)

Pin 1, denoted by square solder pad (on bottom of PC board)

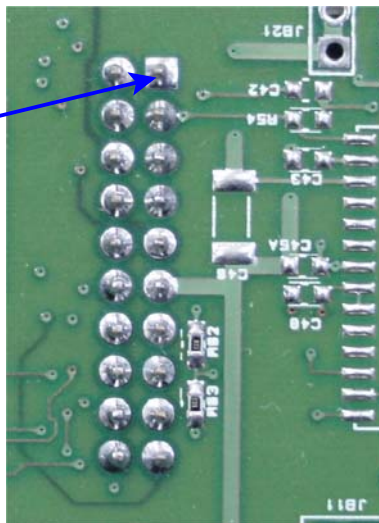


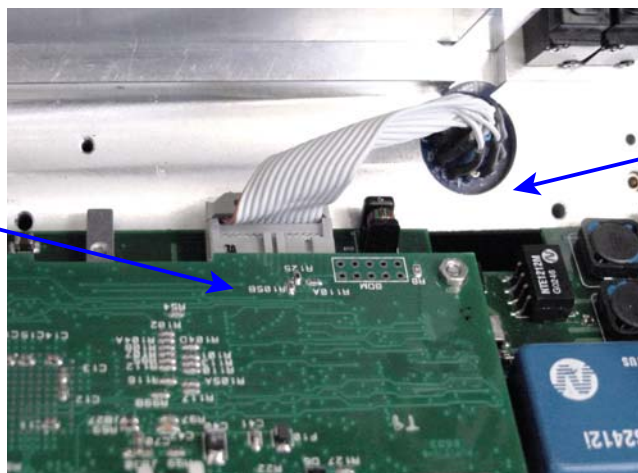
Figure 9
Finding Pin 1 on a PC Board



Figure 9a
Connectors on 322/323 PCB

Orient red stripe as shown

P1 connection on PC-322 board



Scanner top plate connection

Figure 10
Top Plate to P1 Connection on PC-322

- (5) Carefully guide the LEDs (on the PC-322 board) into their respective holes in the scanner chassis. Ensure that all cables and tubing are not crimped or restricted and attach the PC-322/323 boards to the chassis with the three (3) Phillips-head screws through the top plate (that were previously removed and saved). Do not tighten completely.
- (6) Connect the ribbon cable from P3 on the PC-322/323 board to the connector on your PC-327 board (red line indicates pin 1). (See **Figure 11**.)



PC-322/323
connection to
the PC-327
board

Note
orientation of
red stripe

Figure 11

PC-327 Connection and Cable Tie-down

- (7) Insert a plastic cable tie-down through the tie-down mount previously installed and around the clear plastic tubing as shown in **Figure 11**.

The following two pictures show a completed 9016 module upgrade with side and top views.

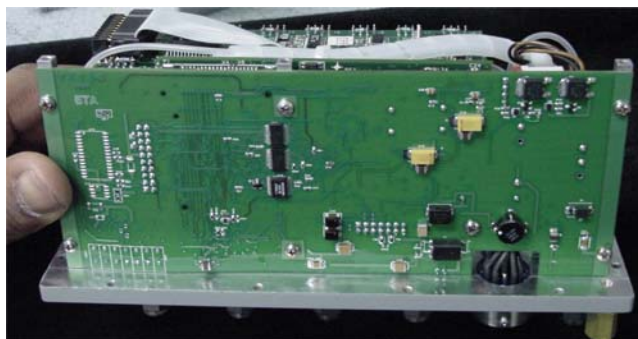


Figure 12
Side View of 9016 Upgrade



Figure 13
Top View of 9016 Upgrade

Final Installation

- (1) Carefully reinstall the module into the housing, aligning the retaining pins in the housing with holes in the brackets on your PC-322/323 boards. Ensure that none of the wiring harnesses or nylon tubing are pinched. Ensure the Viton[®] gasket is flat between the two surfaces and is without folds. Tighten the three screws for this PC-323 board.
- (2) Re-install the twelve (12) Phillips-head screws around the top plate perimeter.
- (3) Install the upgrade kit tag on the end of your scanner, just below the serial number/nameplate. The tag is designed to fit directly beneath the nameplate. Clean the surface of the with isopropyl alcohol to achieve good adhesion. Peel off the protective covering layer of double-faced tape and position the sticker as described above.

Final Checkout

Test your Intelligent Pressure Scanner for proper operation. For operation of your newly upgraded Intelligent Pressure scanner, please refer to your **9116 User's Manual**, available from the Pressure Systems web site, www.PressureSystems.com.

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